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UNITED STATES MILITARY ACADEMY

WEST POINT, NEW YORK

THE DEVELOPMENT OF AN
INTEREST-BASED GUIDANCE
PROFILE FOR USE IN
ACADEMIC COUNSELING

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NOVEMBER 1980

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The Development of an Interest-Based Guidance
Profile for Use in Academic Counseling

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Project Number: 274
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November 1980

ABSTRACT

In June 1978, the Dean of the Academic Board requested that the Office of the Director of Institutional Research (ODIR) initiate a research project to develop techniques for providing objective guidance measures to assist cadets in the selection of their area of concentration. ODIR report 79-006 documented the results of the initial study. The current report documents the changes that were made to produce an operational system that was used in the academic counseling for the area of concentration/field of study selection for the USMA Class of 1982. The report describes in lay terms the procedures used to develop the Strong-Campbell Interest Inventory-based profiles used in the counseling sessions. More complete technical documentation is available at ODIR. The report also discusses some of the problems encountered and summarizes the conclusions and recommendations which have been made to the Dean and the DIR. An important recommendation, which has been approved, is to continue to refine the academic counseling system and produce interest-based profiles for the Class of 1983.

NOTE: Any conclusions in this report are not to be construed as official U.S. Military Academy or Department of the Army positions unless so designated by other authorized documents.

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UNITED STATES MILITARY ACADEMY
WEST POINT, NEW YORK 10996

The Development of an Interest-Based Guidance
Profile for Use in Academic Counseling

I. INTRODUCTION

A. BACKGROUND.

1. In June 1978, the Dean of the Academic Board requested that the Office of the Director of Institutional Research (ODIR) initiate a research project to develop techniques for providing objective guidance measures to assist cadets in the selection of their area of concentration. ODIR report 79-006, "The Development of Guidance Materials for Cadets in the Selection of Their Area of Concentration" (Ref 1), documents the results of the initial study. The objective of the research was to use data from cadet records to search for unique patterns of measurable characteristics that best distinguish cadets successful in one area of concentration from cadets in other areas. The predictor variables considered in the study were:

- a. Measures of interest patterns - scores on the Strong-Campbell Interest Inventory (SCII) scale.
- b. Measures of value - scores on the Rokeach Value Survey scales.
- c. Measures of academic ability - high school performance and entrance test scores.
- d. Early academic performance at USMA - course grades for the first three academic terms.

The criterion variable was graduation in one of four academic areas of concentration versus graduation in any of the remaining three areas. The four academic areas of concentration considered in the study were Basic Sciences, Applied Sciences and Engineering, Humanities, and National Security and Public Affairs. Additionally regression equations were developed to predict a quality point average (QPA) for each area of concentration. Figure 1 is an example of the information sheet developed for the Class of 1981.

2. Although the counseling instrument appeared to be favorably received by the cadet sample, an internal review of the system which had been developed revealed the following:

- a. The production process developed to produce the guidance material was complicated and inflexible.
- b. The QPA prediction system for any given cadet was not necessarily well suited to discriminate among his predicted QPA's for the four areas of concentration.
- c. The use of the Rokeach Value Scale complicated the production process and added little to the predictive equations.
- d. The SCII results are easily interpreted by cadets and can be used to associate a cadet's interest with the interests of cadets who are enrolled in a particular area of concentration.

Based on these findings, a decision was made by the Director of Institutional Research to use only the SCII as the basis for constructing an interest computability scale for each area of concentration (Ref 2). The scales were to be based on SCII data from the Classes of 1978 and 1979 and validated with the Class of 1980 data. Average interest "scores" were to be developed from cadets who were in the upper half of their class standing in each of the five areas of concentration. The average interest "scores" were also to be developed for the fields of study within each area, if feasible.

Figure 1

Area of Concentration Guidance for the Class of 1981

WILLIAMS, JOSEPH K. 8119437 Co. B4

SECTION I: COMPATIBILITY (SIMILARITY OF INTERESTS & VALUES)

MGST APPLIED SCIENCES AND ENGINEERING
2ND BASIC SCIENCES
3RD NATIONAL SECURITY AND PUBLIC AFFAIRS
LEAST HUMANITIES

SECTION II: PREDICTED AREA QPA

	R A N G E	
	Probable Low	Probable High
APPLIED SCIENCES AND HUMANITIES	3.50	3.88
BASIC SCIENCES	3.36	3.60
NATIONAL SECURITY AND PUBLIC AFFAIRS	3.46	3.82
HUMANITIES	2.65	2.89

SECTION III: B/A AREAS GROUP VS N/H AREAS GROUP

THE COMPOSITE OF YOUR COMPATIBILITY & SUCCESS PLACES YOU AS FOLLOWS:

"B/A" Areas			E I T H E R	"H/N" Areas		
VERY HIGH B/A	HIGH B/A	TYPICAL AREAS B/A		TYPICAL AREAS H/N	HIGH H/N	VERY HIGH H/N
1	1	1		1	1	1
1	1	1		1	1	1
1	1	1		1	1	1



Note: This figure was extracted from Ref 1, pg. 29.

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3. It was envisioned that the final product of the research project was to be a computer printout for each cadet who had completed the SCII. The printout, which would show and explain the interest scores for each area of concentration and field of study, would only be part of a guidance package provided each company academic counselor. The guidance package would contain the printout showing the interest scores for the academic areas and fields, the commercially produced SCII results, the cadet's academic transcript, and other instructions and information provided by the Office of the Dean. The entire package would be used by the academic counselors to assist third class cadets in making an intelligent decision in the selection of an area of concentration and field of study that was most compatible with their interests, abilities and goals.

B. PURPOSE. The purpose of this report is to describe the development of the interest-based, area/field differentiating profile for the Class of 1982 and make recommendations concerning the refinement of the profile for use with the Class of 1983. This report is not intended as a complete technical documentation of the processes and methods that have been developed and employed in the project. However, such technical documentation does exist in the form of memorandums, graphs, tables, and computer printouts, and will be published in a companion technical report.

II. METHODOLOGY

A. GENERAL. Figure 2 shows the general methodology used to produce the interest-based scores for areas of concentration and fields of study for the Class of 1982.

1. Transcript data for the Classes of 1978 and 1979 were input to the Dean's general purpose awards program, which had been modified to average course grades that are directly related to a specific area of concentration and a specific field of study. The output of the program was a data file containing the averages and rank ordering by average of each cadet who had graduated in a particular area of concentration and field of study. For each area and field, the median grade was determined.

2. The SCII had been administered to the Classes of 1978 and 1979, and the results were grouped, first by area of concentration and then by field of study, to facilitate the correlation analysis.

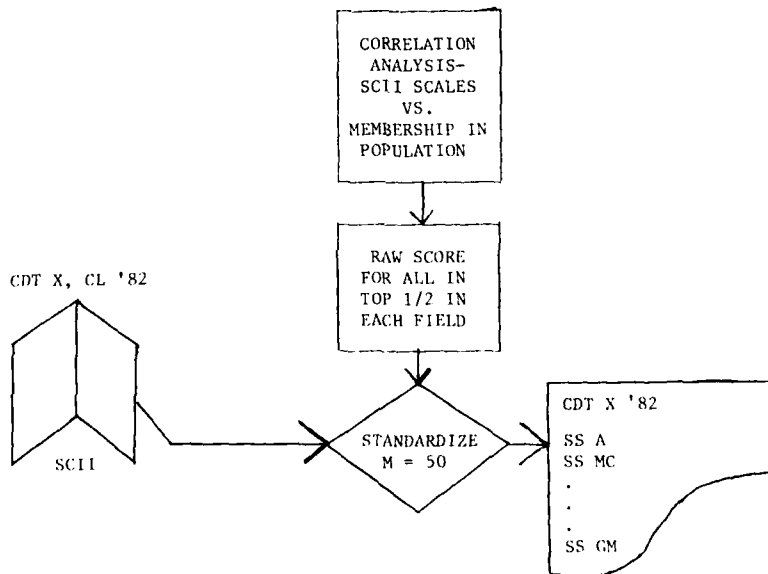
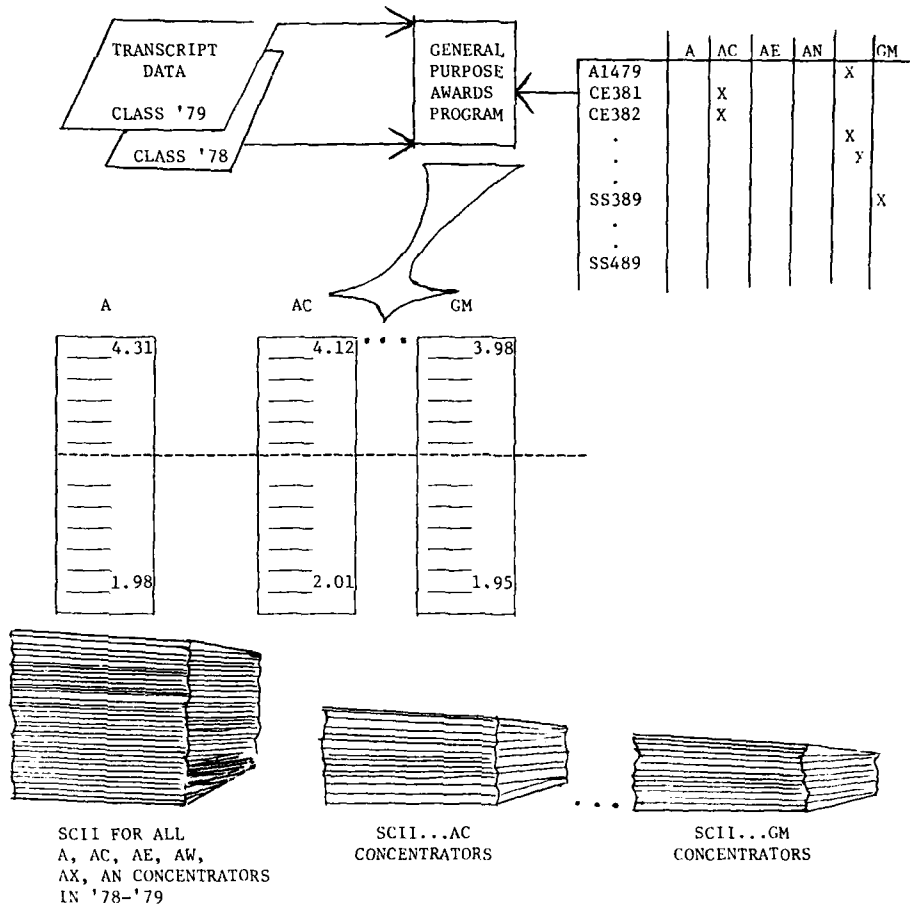
a. For each area of concentration and field of study, a point-biserial correlation coefficient* between membership/non-membership (scored 1 or 0) in an area or field and the score on each of the 176 SCII scales was computed.

b. For each area and field, the SCII scales with highly significant point-biserial correlations were selected to be included as variables in an equation designed to yield an interest-based raw score. The development of these equations will be explained later in this section.

*Note: Point-biserial correlation coefficients are calculated when one of two variables has been dichotomized, giving rise to only two observable values (0 and 1). For this analysis, the criterion variable is the area of concentration or field of study (dichotomized so that a value of 1 indicates membership in that area or field and a value of 0 indicates membership in some other area or field) and the predictor variable is the score on a particular SCII scale.

Figure 2

Procedure Used to Produce Interest-Based
Scores for the Class of 1982



3. The raw score equations were then standardized, based on the scores of the cadets in the Classes of 1978 and 1979 who graduated in the top half of their area and field.

4. The SCII results for cadets in the Class of 1982 were then input to a routine which calculated standard scores for each area of concentration and field of study considered in the analysis and produced an individualized printout which became a part of the academic counselor's guidance packet.

B. DATA COLLECTION.

1. The SCII (Ref 3) is an interest assessment instrument which consists of 325 items, to most of which the person completing the form responds by filling in either "like," or "indifferent", or "dislike". Groups of items concern occupations, school subjects, activities, amusements, types of people, preferences between two activities, and personal characteristics. The item responses are used to determine standard scores for six general occupational "theme" scales, 23 "Basic Interest" scales, 124 "Occupational" scales, and 23 "Special" scales. The instrument is scored by a commercial vendor who provides a computer tape containing each cadet's item responses and the computed scale scores. The cadet's are also provided an individualized profile which shows the standardized scale scores. The SCII has been administered to the Classes of 1978-1982, and it will be administered to the Class of 1983 during the fall semester, 1980.

2. The academic transcript data for each class is available on the cadet data base. The final course grades for each cadet in the Classes of 1978 and 1979 were extracted from the cadet data base and input to the Dean's general purpose awards program. The program produced a computer tape and listing which showed, for each area of concentration and field of study, a rank ordering of cadets who graduated in a particular area or field. The average used for the ordering was the average of grades for courses that are directly related to the area or field. For example, Cadet X appears in the data for the Basic Science area of concentration and in the data for the Chemistry Field of study. His overall QPA at graduation is 3.52 while his average for the Basic Science related courses is 3.78 and for the Chemistry related courses is 3.82.

C. DATA REDUCTION.

1. Each area of concentration and field of study was assigned a dummy variable number to be used in the calculation of point-biserial correlation coefficients for membership/non-membership in an area or field and the score on each of the 176 SCII scales. The dummy variable associated with each area or field was dichotomized so that a value of 1 was assigned when a cadet's transcript data showed that he graduated in that area or field. Otherwise, a value of zero was assigned to the dummy variable for area or field. Table 1 shows the dummy variable numbers associated with each area of concentration and field of study (area/field), a standard letter code which is used by the cadets, and the strength figures for the Classes of 1978 and 1979 combined.

2. For ease of processing, the cadet SCII data were merged with the cadet academic data into one file which contained, for each cadet, the SCII scale scores; the area, field and overall QPA; and the dummy variables which had been initialized to reflect the cadet's area and field (the appropriate dummy variables were assigned a value of 1 and all others were assigned a value of 0). The Statistical Package for the Social Sciences (SPSS) Pearson Correlation Subprogram (Ref 4) was used to compute correlation coefficients (point-biserial correlations since the dummy variables were dichotomized) for all pairs of dummy variables and SCII variables (the SCII scale scores).

TABLE 1

AREAS OF CONCENTRATION, FIELDS OF STUDY, STANDARD LETTER
CODES, DUMMY VARIABLE NUMBERS, AND STRENGTH FIGURES FOR THE
CLASSES OF 1978 AND 1979 COMBINED

DUM NO.	AREA/FIELD	CODE	STRENGTH	
			N	Z
01	APPLIED SCIENCE & ENGR AREA	A	(537)	(33.2)
06	"AS&E" Interdisc Field	AZ	48	3.0
07	Aerospace Engr	AA	45	2.8
08	Civil Engr	AC	236	14.6
09	Electrical Engr	AE	49	3.0
10	Nuclear Engr	AN	38	2.4
11	Operations Research	AO	0	-
12	Weapons (Mech) Engr	AW	48	3.0
13	Engineering Mechanics	AX	73	4.5
02	BASIC SCIENCES AREA	B	(169)	(10.5)
14	"BS" Interdisciplinary	BZ	16	1.0
15	Chemistry	BC	65	4.0
16	Mathematics	BM	29	1.8
17	Physics	BP	28	1.7
18	Computer Science (CL '81 on: AY)	BX (AY)	29	1.8
03	NATIONAL SECURITY & PUBLIC AFFAIRS AREA	N	(668)	(41.3)
19	"NSPA" Interdisc. Field	NZ	279	17.2
20	Economics Field	NE	82	5.1
21	Geography Field	NG	55	3.4
22	History Field	NH	59	3.6
23	International Affairs	NI	83	5.1
24	Military Studies Field	NM	30	1.8
25	Political Sciences Field	NP	44	2.7
26	Behavioral Sciences Field	NS	36	2.2
04	HUMANITIES AREA	H	(157)	(9.7)
27	"H" Interdisc. Field	HZ	26	1.6
28	American Studies	HA	2	-
29	Literature	HL	26	1.6
30	German	HG	28	1.7
31	French	HF	18	1.1
32	Portuguese	HP	13	0.8
33	Spanish	HS	22	1.4
34	Chinese	HC	11	0.7
35	Russian	HR	11	0.7
36	Arabic	HX	0	-
(37)*	(Foreign Languages) (30-36)	HFL	(102)	(6.3)
(38)*	(Romance Languages) (31-33)	HRL	(53)	(3.3)
(39)*	("Eastern" Languages) (34-36)	HEL	(22)	(1.4)
05	MANAGEMENT (Interdisc) Field	GM	86	5.3
(40)*	Physical Sciences (6-18) = 1,		(706)	(43.7)
	Non-Physical Sciences (19 to 36, 05) = 2		(911)	(56.3)
(41)*	Pure Science (14-17 & 27-36) = 1,		(326)	(20.2)
	Applied Sciences (5 to 13, 18 to 26) = 2		(1291)	(79.8)
	TOTALS		1617	

* Dummy variable for an experimental grouping of fields.

3. For each dummy variable, the SCII scale with correlations significant at least at the .001 level ($p \leq .001$) were selected to be included as variables in an equation designed to yield an interest-based raw score (for the area or field). The general form of the raw score equation is:

$$RS_j = \sum_i^N W_{ij} X_i$$

Where: RS_j is the raw score for the j^{th} dummy variable (area or field)

W_{ij} = correlation coefficient for the j^{th} dummy variable and the i^{th} SCII scale*

X_i = respondent's score on the i^{th} scale

4. The raw score equations were transformed to standard score equations (Ref 5, pp.413-415). The transformation was based on the raw score mean and standard deviation of cadets who graduated with area or field specific QPA's in the top half of the area or field. The transformed equations produced area and field scores with a mean of 50 and a standard deviation of 10. These interest-based standard scores are computed for each cadet who completed the SCII. They indicate the similarity between an individual cadet's interest pattern and the interest patterns of cadets who graduated in the upper half of their area or field. For a particular area or field, a score of 45 or higher indicates a similarity of interest. The higher the score, the more similar the interests to those of "successful" cadets.

5. The cross-validation of the "classification" equations using the Class of 1980 SCII and academic data was not accomplished prior to the time the equations were used to provide information to the Class of 1982. A decision was made to operationally use the results and procedures developed since previous research (Ref 1) and the results achieved with the data from the Classes of 1978 and 1979 indicated the validity of the approach.** A separate technical study will present cross-validation results.

III. RESULTS

A. Figure 3 is an example of the report provided to the members of the Class of 1982 who had taken the SCII. The respondent's copy of the commercially prepared SCII profile (Ref 2) was given to each cadet in November 1979. Some additional information

*Note: The correlation coefficients used as W_{ij} 's were adjusted by applying Fisher's transformation (Ref 5, pp.337-340) to correct for the skewed distribution of correlation coefficients.

**Cadets in the upper half of an area/field tended to score 50 on the equations developed for that area/field and less than 50 on the equations for other area/fields. Also, cadets in the lower half of their area/field tended to obtain scores lower than 50 for their own area/field and even lower scores for other area/fields.

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As the number of nodes in the network increases, the number of nodes that are not connected to the network increases. This is because the number of nodes that are not connected to the network is proportional to the number of nodes in the network. As the number of nodes in the network increases, the number of nodes that are not connected to the network increases.

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(61)

A^A A^Y A^E A^P A^m
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$$\dots (x^2 + y^2 + z^2) (x^2 + y^2 + z^2) (x^2 + y^2 + z^2) \dots$$

to assist in the general interpretation of the results was also provided. No attempt was made at that time to offer the cadet any guidance on how to relate the SCII results to his choice of area and field. The report shown in Figure 3 and the counselor's copy of the commercially produced SCII profile, however, were given to the company academic counselors in February 1980. The company academic counselors were briefed on the appropriate uses of the two SCII documents, and were given general instructions and guidelines for their counseling sessions. A television tape prepared for the counselors showed "an approach" to incorporating the SCII profile into discussions concerning the selection of an area and field, but the locally developed report was not mentioned in the tape (it had not been developed when the tape was produced). In May 1980, after counseling for areas and fields had been completed, the counselors were asked to respond to a survey designed to assess the usefulness of the counseling materials made available to the cadets and counselors. The detailed analysis of this survey are reported in ODIR Report 80-015 (Ref 6). Generally, it was determined that counselors found both SCII documents to be useful in their discussions with cadets. They also perceived that the interest based information helped the cadets to firm up their plans for an area of concentration and field of study.

B. As the report shown as Figure 3 points out for the cadets, interest similarity scores for some fields of study were not provided. The primary reason for this was that the numbers of students in the fields were considered inadequate for the development of reliable scores.

1. No interest similarity scores were provided for the Operations Research field since none of the students in the Classes of 1978 and 1979 had previously selected the field.* However, 36 cadets from the Classes of 1979 and 1980 who performed well in Operations Research courses have now been identified by the Department of Engineering. The SCII results for these cadets can be used to develop an equation to calculate an interest similarity score for operations research.

2. Interest similarity scores were not produced for specific foreign language fields. The small numbers concentrating in a specific language were combined in order to obtain the data necessary to produce a "foreign language" interest similarity score. This approach was considered adequate since it was felt that usually (most of the time) the cadet's decision was whether or not to concentrate in a language field. The particular language would likely be the one in which the cadet had some experience.

3. An interest similarity score was produced for the National Security Public Affairs (NSPA) Interdisciplinary field due to the exceptionally large number of cadets (279) enrolled. The interdisciplinary fields for the Humanities, the Basic Sciences, and the Applied Sciences and Engineering (ASE) involved smaller numbers of cadets (less than 48), and it was felt that the area interest similarity scores would also serve as an indicator of interest in the interdisciplinary field. That relationship was shown to hold true for the NSPA area and the NSPA interdisciplinary field.** When the class of 1980 data are added to the data base used in the scale development, the number of cadets enrolled in the ASE interdisciplinary field should be sufficient for the development of reliable interest similarity scores.

*Note: Operations research is a new field of study which was available for the first time to the Class of 1982.

**Note: The interest similarity score for all cadets in the NSPA area was 50 on the NSPA area scale. The average score for the same cadets on the NSPA Interdisciplinary scale was 50.3 - an insignificant difference.

4. American studies, foreign area studies and military history are new fields, and it may take several years to get the number enrolled to the level necessary for the development interest similarity scales.

C. The appendix shows the means of each area and field scale computed for the cadets in the Classes of 1978 and 1979 who graduated in the "high half" of their chosen area and field.

1. Table 2 is an extract of data from the appendix showing just the area of concentration means. On the ASE scale the average score is 50.0 for the 27 cadets who selected the ASE area and graduated with QPA's which placed them in the top half of their area*. The 39 cadets who graduated in the top half of the Basic Sciences (BS) area scored 49.9 on the ASE scale. The negligible difference in the two scores indicates that there is essentially no distinction between the two groups based on the ASE scale. Such a result could logically be expected due to the technical nature of the two areas. The table shows, however, that the ASE scale does indicate that there are significant differences for the other three, "less technical" areas. Similar comparisons can be made for each of the area scales, and no interpretative anomalies** are encountered. All of the mean scores are 50 or less, and where two scores on a scale are similar (the difference between the means is 2.5 or less), the "fuzzy" results are defensible based upon the nature of the areas.

2. Similar comparisons can be made for the field scores reported in the appendix. The scales for which interpretative anomalies exist are extracted from the appendix and presented in Table 3. Due to the apparent close relationships among the courses for which the interpretative anomalies occurred and the small numbers of individual cases which could be affected, a decision was made not to offer an explanation of these "exceptions" to the counselors or students. It was felt the few errors in interpretation that could arise would not be grossly out of line with an individual's true pattern of interests. An attempt to explain or warn of possible interpretative errors for a few cases could have caused an unwarranted reluctance to use the results.

*Note: The mean score along the diagonal is 50.0 in all cases since the scale for each area was standardized (to produce a mean of 50 and a standard deviation of 10) based on the scores of cadets who graduated in the top half of their area.

**Let m_{ji} be the mean interest similarity score on the scale developed for the i th area or field, computed for the cadets who graduated in the top half of area or field i . Let m_{ik} be the mean interest similarity score on the scale developed for the i th area or field and computed for the cadets who graduated in the top half of area k . Then an interpretative anomaly exists if $m_{ik} - m_{ji} > 2.5$. Note that a difference of 2.5 units is $2.5/10 = .25$ standard deviation. Note also that m_{ji} must always = 50.0.

TABLE 2
Means for Area ISS Scores

Average Scores for Cadets Who Graduated With QPA's in the "High-Half" of Their Area					
Area of Concentration Scales	Applied Sciences and Engineering (N = 27)	Basic Sciences (N = 39)	Humanities (N = 79)	National Security and Public Affairs (N = 305)	Management (N = 43)
Applied Sciences and Engineering	50.0	49.9	38.9	38.0	42.1
Basic Sciences	44.0	50.0	26.5	23.8	27.5
Humanities	31.0	36.0	50.0	46.9	34.8
National Security and Public Affairs	30.0	31.0	49.4	50.0	42.0
Management	35.0	27.0	32.5	38.3	50.0

TABLE 3

ISS Means for Fields for Which Interpretative Anomalies Exist

Scale \ M_{ik} i	AA	AY	AE	AW	BP	BC	HL	NI	NP
AC	53.7	54.2	53.5	53.1					
AX	53.0	54.3	53.0	52.2					
AN		55.7			55.4				
BM		58.5	52.7		63.3	55.4			
FL							57.9	54.4	52.9
NZ									55.3
NS							54.4		

The field codes were:

AA = Aerospace Engineering
 AC = Civil Engineering
 AY = Computer Science
 AE = Electrical Engineering
 AX = Engineering Mechanics
 AN = Nuclear Engineering
 AW = Mechanical Engineering
 BC = Chemistry

BM = Mathematics
 BP = Physics
 FL = Foreign Languages
 HL = Literature
 NZ = NSPA Interdisciplinary
 NS = Behavioral Sciences
 NI = International Affairs
 NP = Political Science

*Note: M_{ik} is the mean interest similarity score on the scale developed for the i^{th} field and computed for cadets who graduated in the top half of field k .

IV. CONCLUSIONS

A. The computer produced report provided to the members of the Class of 1982 who had taken the SCII overcame many of the problems encountered in generating interest-based academic counseling information for the Class of 1981.

1. The only predictor variables used for scale development were scores on the SCII scales.

2. The individualized computer produced report was designed to be understood without the benefit of trained or experienced counselors. The link between it and the commercially produced SCII profile was made clear.

3. The production process is simple and well documented. A computer produced report can be provided for anyone having SCII results.

B. Several fields of study were not included on the reports prepared for the Class of 1982. The primary reason was that the numbers of students in the fields were considered inadequate for the development of reliable scores. Data is now available for the construction of scales for two of these fields: Operation Research and ASE Interdisciplinary.

C. Interpretative anomalies exist for only a few combinations of scales and fields. Due to the close relationships among the courses for which the anomalies exist, a decision was made not to offer an explanation of these "exceptions" to the counselors or students.

D. Overall, the interest-based reports produced for the Class of 1982 were well received and used by the counselors and students.

V. RECOMMENDATIONS

A. For the Dean.

1. Administer the SCII to the Class of 1983.

2. Continue coordination with ODIR to develop and refine the academic counseling process - in particular the integration of interest-based guidance into the area/field counseling.

B. For ODIR.

1. Produce for the Class of 1983 essentially the same report that was provided to the Class of 1982.

2. Document the validity of the interest-based guidance scores.

3. As data become available, add the fields now missing on the cadet report.

4. Use the Class of 1980 data to refine the field equations - in particular those fields for which interpretative anomalies exist.

5. Continue coordination with the Office of the Dean to develop and refine the academic counseling program.

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APPENDIX

Means of Scores Made on 25 Area/Field ISS Scales by Area/Field "High-half QPA"
Groups in Classes of 1978 and 1979, and Total Group Means and Standard Deviations

Interest Similarity Standard Score Scales	"High-Half QPA" Group (6 Number Cases)											
	A*	AA	AC	AY	AE	AX	AN	AW	B*	BC	BM	BP
	(273)	(23)	(120)	(13)	(26)	(35)	(17)	(22)	(39)	(17)	(10)	(12)
A*												
*AS&E Area	<u>50.0</u>	51.9	49.1	50.64	54.2	49.4	47.6	50.9	49.9	49.6	47.4	52.6
Aerospace Engr.		50.0	45.4	50.1	49.0	45.8	47.6	47.8		47.8	41.1	51.1
Civil Engr.		<u>53.7</u>	50.0	54.2	53.5	50.1	50.6	53.1		48.2	44.1	52.9
Computer Sci.		42.6	38.0	50.0	42.3	38.5	42.9	43.3		40.8	32.5	44.8
AE Electrical Engr.		48.1	43.8	49.1	50.0	44.6	44.4	46.5		45.6	41.9	49.9
AX Engineering Mech.		53.0	49.2	54.3	<u>53.0</u>	<u>50.0</u>	50.2	52.2		48.2	43.5	52.2
AN Nuclear Engr.		51.0	44.3	55.7	51.1	45.0	<u>50.0</u>	49.9		49.2	39.1	55.4
AW Weapon Systems (Mech) Engr.		50.3	45.2	51.3	50.6	45.1	<u>46.2</u>	<u>50.0</u>		43.1	37.7	49.8
B*												
BS Area	44	47.2	42.2	50.57	47.4	43.2	46.5	45.1	<u>50.0</u>	51.6	41.8	54.5
BC Chemistry		43.3	38.0	44.7	42.7	39.2	42.1	39.8		50.0	37.9	50.8
BM Mathematics		52.0	47.7	58.5	52.7	48.0	52.1	52.1		<u>55.4</u>	<u>50.0</u>	63.3
BP Physics		41.5	35.5	44.1	42.5	36.2	39.4	39.5		43.5	34.6	<u>50.0</u>
H*												
Humanities Area	31	30.1	32.1	29.6	31.4	32.6	31.3	29.4	36	36.0	38.8	33.9
FL Foreign Languages (single or double)		32.3	34.5	31.4	33.6	34.9	33.2	32.0		37.5	40.7	34.9
HL Literature		22.6	24.1	22.4	22.1	24.7	23.8	21.6		29.5	31.4	28.2
N* NS&PA Area	30	28.1	31.9	26.7	27.8	31.4	30.3	29.0	31	30.5	35.5	26.8
N NS&PA Interdisciplinary		29.0	32.6	27.3	28.2	32.1	30.9	29.8		29.9	34.2	25.6
NS Behavioral Sci.		11.9	14.4	10.0	12.3	15.4	14.2	9.2		19.6	22.7	14.6
NE Economics		32.4	36.1	35.8	31.3	34.2	37.5	37.1		30.4	36.0	29.4
NG Geography		24.0	24.8	15.9	22.6	25.4	20.0	20.8		24.4	22.2	16.8
NI International Affairs		24.0	27.0	22.3	24.8	26.5	25.4	24.2		27.4	32.4	25.4
NM Military Studies		33.0	34.0	27.7	33.6	34.0	28.3	31.2		30.3	38.5	32.3
NH Modern History		21.7	25.6	19.5	23.4	25.4	22.5	22.2		26.5	33.3	23.3
NP Political Sci.		17.0	21.4	17.9	16.3	20.4	22.3	18.6		21.9	26.6	18.2
GM Management	35	33.4	36.4	35.1	31.0	34.8	36.9	37.9	27	26.6	30.9	23.5

APPENDIX (Continued)
 "High-Half QPA" Group (& Number Cases)

Standard Score Scales	H*	FL	HL	N*	N	NS	NE	NG	NI	NM	NH	NP	CM	Total Class '79 & (1496)	% of Class in Area/ Field	CI '82 (918)	SD
Interest Similarity	(79)	(48)	(11)	(305)	(118)	(17)	(40)	(25)	(39)	(17)	(30)	(20)	(43)	Mean	SD	M	SD
A* AS&E Area	38.9	39.6	34.4	38.0	37.3	35.6	37.5	43.0	37.1	45.4	38.1	31.4	42.1	(42.71)	(11.5)	(35)	(43.9) (11.9)
AA Aerospace Engr.		30.2	25.5		28.2	26.6	30.5	32.6	25.4	31.2	26.7	23.5		36.24	12.4	3	37.2 11.5
AC Civil Engr.		30.8	23.4		29.0	25.5	32.6	33.9	24.6	33.8	27.1	23.0		38.76	14.34	15	39.2 13.4
AV Computer Sci.		14.5	4.5		11.1	7.8	17.7	13.7	4.5	11.4	7.9	7.6		24.08	19.53	2	24.6 18.1
AE Electrical Engr.		29.0	23.8		25.4	24.8	27.7	31.1	23.8	32.2	25.6	20.7		34.18	13.17	3	35.7 12.5
AX Engineering Mech.		30.8	23.3		28.5	25.8	31.2	33.7	23.7	32.0	26.3	22.8		38.36	14.15	5	38.9 13.1
AN Nuclear Engr.		19.1	10.7		14.8	13.1	20.5	20.0	9.3	17.4	12.5	9.5		28.72	21.45	2	30.0 19.8
AW Weapon Systems (Mech) Engr.		21.2	11.7		18.8	14.7	23.5	25.5	13.8	25.6	16.9	10.9		31.10	18.47	3	31.5 17.4
B* BS Area	26.5	28.1	25.7	23.8	22.7	22.5	25.7	27.9	22.4	28.4	24.1	19.8	27.5	(31.69)	(15.4)	(9)	(33.1) (14.2)
BC Chemistry		28.3	28.3		23.1	24.2	22.9	29.7	23.9	27.6	24.8	19.8		29.96	14.17	2	31.8 13.3
BM Mathematics		24.7	24.2		18.5	17.8	28.1	19.4	19.0	28.3	21.1	17.5		31.21	21.17	1	32.0 19.4
BP Physics		16.7	13.8		11.5	11.0	16.2	17.0	12.0	20.4	13.4	7.3		27.34	18.47	1	23.9 17.3
H* Humanities Area	50.0	47.3	56.4	45.9	46.2	50.8	42.5	43.6	52.1	46.5	49.6	50.3	34.8	(19.38)	(10.8)	(10)	(39.6) (10.2)
FL Foreign Languages (single & double)		50.0	57.9		49.0	52.9	45.3	46.9	54.4	49.5	52.5	52.9		42.14	10.79	6	42.3 10.1
HL Literature		38.8	50.0		37.3	42.1	33.9	34.5	44.3	38.4	41.0	41.1		30.61	11.41	2	31.0 10.8
N* NS&PA Area	49.4	47.6	52.9	50.0	50.3	52.3	47.4	45.9	53.2	46.1	51.3	54.8	41.96	(41.70)	(12.8)	(41)	(40.9) (11.9)
N NS&PA Interdisciplinary		46.7	50.2		50.0	51.1	46.5	46.4	51.0	44.0	49.4	53.3		42.00	12.27	18	41.3 11.4
NS Behavioral Science		41.6	54.4		41.3	50.0	33.4	36.8	49.1	36.3	44.7	47.9		28.79	19.17	2	29.0 18.1
NE Economics		39.1	38.5		43.8	41.9	50.0	34.5	42.2	36.2	41.7	49.1		40.10	11.16	5	38.1 11.3
NC Geography		38.3	37.3		40.1	39.9	28.0	30.0	38.5	37.1	39.1	36.0		33.99	13.98	4	35.0 13.0
NI International Affairs		43.0	50.3		44.3	47.6	41.4	40.3	50.0	43.8	47.6	48.8		35.94	12.23	5	35.4 11.3
NM Military Studies		41.4	44.6		41.6	43.4	38.6	42.4	46.4	50.0	45.1	41.3		37.76	11.19	2	38.1 11.2
NH Modern History		44.7	52.7		45.4	49.0	41.5	42.8	51.8	46.9	50.0	50.4		35.05	14.54	4	35.9 13.5
NP Political Science		38.8	46.8		41.8	44.8	41.4	33.0	46.0	35.0	43.3	50.0		32.04	15.21	3	30.7 14.6
GM Management	32.5	34.5	26.3	38.3	40.1	35.8	44.9	35.5	32.6	29.4	34.8	41.6	50.0	(39.19)	(13.6)	(5)	(37.4) (13.5)

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USMA Class of 1982. The report describes in lay terms the procedures used to develop the Strong-Campbell Interest Inventory-based profiles used in the counseling sessions. More complete technical documentation is available at ODIR. The report also discusses some of the problems encountered and summarizes the conclusions and recommendations which has been approved, is to continue to refine the academic counseling system and produce interest-based profiles for the Class of 1983.

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